

## Appendix C: Regulations on Products that Contain Mercury

*Note: This table highlights regulations that affect the most common mercury-containing products. It is not a comprehensive list of all products that may contain mercury. The "Comments" section includes general information that expands on the regulatory information.*

| Product/Use                         | Role of Mercury  | Regulations/Programs on Mercury Products   | Fed/State Regulation | Comments   |
|-------------------------------------|--|--|----------------------|--|
| <b>Chemical and Allied Products</b> |  |  |                      |  |
| <b>Agricultural Products</b>        | Mercury compounds used as pesticides, bactericides, disinfectants, fungicide                                       | Restricted and/or banned under FIFRA   | Federal              |  |
| <b>Turf Products</b>                | Pesticide  | Calo-chlor and calo-gran, the last mercury-based pesticides registered for use in U.S. voluntarily cancelled by manufacturer (Grace Sierra Crop Protection) in November 1993 | Federal              | Approximately 21,000 pounds used annually on golf course turf and greens to control fungi Pink Snow Mold and Grey Snow Mold; manufacturer may sell and distribute products labeled for release or shipment before 6/93 until 6/94: retailers may sell products until stocks exhausted; users may use products until stocks depleted. |
|                                     | Fungicide  | Prohibits use of mercury in fungicides   | MN                   |  |
| <b>Paint</b>                        | Mercury compounds used as biocide to control microbial growth in paint cans and prevent mildew on painted surfaces | Registrations for mercury compounds in indoor and outdoor latex paint banned or cancelled (1990, 1991)   | Federal              | Manufacturers may use up existing stocks   |
|                                     |  | Anti-fouling paints for marine use banned in 1972  | Federal              | Cancellation of biocide registrations has reduced Hg consumption in paint, and paint residue in municipal solid waste; paint cans w/mercury residue are still discarded  |
|                                     |  | No Hg deliberately introduced into paint intended for use in MN (except in art supplies)   | MN                   |  |
| <b>Pigment, Dyes</b>                | Coloring (maroon, red, orange) primarily for plastics  | Cadmium-mercury pigments no longer manufactured in U.S. (domestic production ceased in 1988); may still be imported  | Federal              | Many states have laws that phase out metals in pigments  |
|                                     |  | No Hg deliberately introduced into pigments and dyes intended for use in MN (except in art supplies)   | MN                   |  |
| <b>Cosmetics</b>                    | Preservative, antimicrobial  | Limited to eye area cosmetics or ointments with concentration <65 ppm (21CFR700.13)  | Federal              |  |
| <b>Pharmaceuticals</b>              | Used in antiseptics, ointments, diuretics  | Misbranded drug laws - list quantity of mercury in product   | IL, IN, NY, OH, PA   |  |

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|                                       |  | Yellow mercuric oxide is not generally recognized as safe and effective, or is misbranded for over the counter use                                    | Federal              |   |
| <b>Poisons</b>                        |  | Restrictions on sale of mercury and mercury compounds   | OH                   |   |
|                                       |  | Levels established for Hg products to be considered poisons   | PA                   |   |
| <b>Catalysts</b>                      | Hg used as catalysts for production of vinyl chloride monomers and urethane foams, as well as other products |   |                      |   |
| <b>Packaging</b>                      |  | Restrictions on mercury content in packaging and packaging components; no products may be sold in packaging that contains intentionally introduced Hg | IL, MN, NY, WI       | Implementation dates vary by state, and include general exceptions if no feasible alternatives exist; Pennsylvania is considering bill to regulate toxic materials in packaging |
| <b>Special Paper Coatings</b>         | Mercury bromide and mercury acetic acid used in specialized paper and film with cathode ray tubes            |   |                      | Manufacturers plan to phase out use of mercury in coating   |
| <b>Explosives</b>                     | Mercury fulminate is detonator   | Explosives containing mercury are Class A, maximum hazards  | MN, WI               | In the last 20 years, only the military has used mercury explosives   |
| <b>Fireworks</b>                      | Catalyst/explosive   | Permits required for fireworks with mercury   | MI                   |   |
| <b>Livestock and Poultry Remedies</b> |  | List percentage of mercury on remedy  | MI                   |   |
| <b>Electrical and Electronic Uses</b> |  |   |                      |   |
| <b><i>Electric Lighting</i></b>       |  |   |                      | Electric lighting products are second largest component of municipal solid waste (after batteries)  |
| <b>Fluorescent Lamps</b>              | Mercury vapor fluoresces at UV   | Encouraged as replacement for incandescent bulbs for  | Federal              | Fluorescent lights are largest component of electric  |

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| (low pressure)                     | wavelength   | energy conservation (see 10CFR450.31 - energy conservation measures)   |                      | lighting discards in municipal solid waste; used bulbs considered hazardous waste because high levels of mercury exceed RCRA toxicity characteristic limit (.2 mg/l in leachate)                              |
|                                    |  | Lamps in state-owned buildings must be recycled  | MN                   |   |
|                                    |  | Viewed as by-product that can be recycled, and exempt from RCRA  | OH                   | EPA considering two options to ease RCRA disposal restrictions: (1) inclusion in universal waste rule to facilitate recycling; (2) conditional exemption, which would allow disposal in solid waste landfills |
|                                    |  | Lamps sold to managers of industrial, commercial, office, or multiunit buildings must be labeled; building contractors must specify mercury management plans for removed lamps               | MN                   |   |
| <b>Mercury Vapor Lamps</b>         | Facilitates light production by electric arc                       | Encouraged for energy conservation (see 10CFR450.31 - energy conservation measures)  | Federal              |   |
|                                    |  | Lamps must be self-extinguishing or have protective shield; efficiency standards in public areas (theaters, gyms)  | NY                   |   |
|                                    |  | Mercury must be removed before disposal; lamp sellers and contractors responsible for public education about mercury management requirements; limits on production and distribution of lamps | MN                   |   |
| <b>High Intensity Lamps</b>        |  | Lamps sold to managers of industrial, commercial, offices, or multiunit buildings must be labeled; building contractors must specify mercury management plans for removed lamps              | MN                   | Used for outdoor lighting; mercury lamps are more efficient and brighter than other outdoor lights  |
| <b>Metal Halide Lamps</b>          |  |  | Federal              | Encouraged for energy conservation (see 10CFR450.3 - energy conservation measures)  |
| <b>Incandescent Lamp Filaments</b> | Hg used as continuous electrical contact in tungsten bar sintering |  |                      |   |

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| Wiring Devices and Switches          |   |   |                      |  |
| Thermostats                          | Temperature measurement   | Mercury must be removed for recycling or recovery before disposal; manufacturers must provide information and incentives to ensure recycling or proper management; heating, ventilating and air-conditioning (HVAC) dealers required to properly manage or recycle used mercury thermostats (MN St 115A.93, 115A.9561, 115.932) | MN                   | Digital thermostats are replacing mercury thermostats; long lag time before old Hg thermostats discarded   |
|                                      |   | Products containing Hg must be labeled, including disposal restrictions   | MN                   | MN just began pilot program for HVAC dealers to recycle mercury containing thermostats by returning them to HVAC wholesaler who, in turn, returns them to Honeywell for recycling/reclaiming |
| White Goods                          | Mercury components (e.g., switches) may be included in large appliances (e.g., refrigerators, air conditioners, etc.)   | Mercury components must be removed prior to disposal  | MN, IL               |  |
|                                      |   | Hg in repaired or replaced items must be reused or recycled   | MN                   |  |
| Toys                                 |   | Ban on toys with Hg; fines imposed for retail sales   | MN, WI               |  |
| Electric Wall Switches               |   | Products containing Hg must be labeled, including disposal restrictions   | MN                   |  |
| Electrical Components                | May be included in any electrical machinery (e.g., mining, automotive, and industrial equipment, smoke detectors, etc.) | Limits on mercury use in mining equipment   | PA                   |  |
|                                      |   | Products containing mercury must be labelled, including disposal restrictions   | MN                   |  |
| Batteries                            |   |   |                      |  |
| General Mercury Containing Batteries |   | Batteries included in universal waste rule to ease RCRA restrictions on hazardous waste management and divert   |                      | Batteries were largest source of Hg in municipal solid waste. Many states have banned mercury in   |

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|  |   | waste from MSW landfills; states may set up special collection programs not subject to storage, transportation, and permitting requirements of RCRA   |                      | batteries; manufacturers have reduced mercury use by over 90% since 1988.  |
|  |   | Deposit/refund system will begin in 1998: purchasers return used mercury batteries to retailer or approved collection facility  | MI                   | EPA is requesting comments on labeling batteries to aid in collection, sorting, and recycling; denied a petition filed under §TSCA to require deposit on mercury-containing batteries.   |
|  |   | Task force on storage, transport, disposal, recycling   | IL                   | Industry groups have developed uniform voluntary industry labeling standards for lead and cadmium batteries  |
| <b>Alkaline Batteries</b>  | Prevents corrosion and hydrogen release, extends shelf life; improves performance over temperature range (batteries used in flashlights, radios, and other electronics) | Hg concentrations <.025% by weight  | MN, NY               | Battery manufacturers have eliminated mercury in alkaline batteries, except button cells and reusable batteries.   |
|  |   | Hg banned in alkaline batteries in 1996   | MN, WI               |  |
|  |   |   | MN                   |  |
| <b>Mercuric Oxide Batteries (also button cell, mercury-zinc button cell)</b> | Mercury used as cathode material and is integral component (button cell batteries contain ~40% mercury)   | Sale of dry cell batteries with mercuric oxide, electrode batteries prohibited without exemption; button cell nonrechargeable batteries restricted to <25mg Hg; labeling requirements; disposal prohibited; manufacturers responsible for collection system | MN                   | Primarily used in hearing aids; also used in calculators, watches, cameras, photographic equipment, electronic games, health/hospital equipment, airplane underwater locator beacons   |
|  |   | Hg content of alkaline button cell batteries must be <25 mg by weight   | NY                   | NY is exploring recycling options for these batteries<br><br>Some mercuric oxide cells used in military and medical operations (e.g., night vision devices, EKG machines, etc.) are disposed of as hazardous waste. Proposed federal legislation may ban mercuric oxide batteries. |
| <b>Carbon Zinc (LeClanche)</b>   | Contain ~1% Hg; Hg controls chemical reactions between zinc and other battery components  | Sale prohibited if Hg concentration >1ppm   | NY                   | Carbon zinc cells have shorter life than alkaline batteries. Mercury is no longer used in certain zinc battery products.   |
|  |   | Sale of batteries with Hg banned after 1994   | WI                   |  |
| <b>Zinc Air</b>  | Hg content ~ 1%   | Button cells restricted to <25 mg mercury, labelling  | MN                   | Used in pagers, hearing aids   |

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| Instruments and Related Products |   |  |                      |  |
| Measure and Control Instruments  |   |  |                      |  |
| Thermometers                     | Elemental mercury indicates temperature                               | Limits on distribution of Hg thermometers; mercury must be removed before disposal; no routine distribution of Hg thermometers by medical facilities | MN                   | Digital thermometers are replacing mercury thermometers  |
| Barometers                       | Indicates pressure  |  |                      |  |
| Medical, Scientific Instruments  | Temperature and pressure measuring devices                            | Products w/Hg must be labeled, including disposal restrictions   | MN                   |  |
| Dental Equipment and Supplies    |   |  |                      |  |
| Dental Equipment/Supplies        | Forms alloys; chemically binds compounds to form restorative material | FDA regulates dental mercury and amalgam alloys separately as class I and class II devices under Federal Food, Drug, and Cosmetic Act                | Federal              | One of nation's largest manufacturers of mercury amalgam dental fillings will place warnings on amalgam containers shipped to California and provide warning signs for dental patient waiting rooms under California's Proposition 65 (Safe Drinking Water and Toxic Enforcement Act). |
|                                  |   | Disposal banned unless mercury reused, recycled or managed to ensure compliance  | MN                   |  |
|                                  |   | Purchaser must sign agreement of use for medical or dental uses  | MN                   | The Act requires businesses that use or distribute toxics to label or otherwise notify the public about possible exposure to chemicals.  |
| Discontinued Uses                |   |  |                      |  |
| embalming fluid                  | Preservative  |  |                      |  |
| film pack batteries              |   | Use discontinued as of 1988  |                      |  |
| maritime paints                  | Antifouling agent   | Registrations suspended in 1972  | Federal              |  |
| photographic development soap    |   |  |                      |  |
| wood preservatives               |   |  |                      |  |